AMENDMENTS TO THE CLAIMS

For the convenience of the Examiner, all claims have been presented whether or not an amendment has been made.

1. (Original) A method for using a pilot signal to enhance a data signal associated with the pilot signal, comprising:

receiving a plurality of data signals and a plurality of pilot signals on a plurality of antenna elements, each data signal from the plurality of data signals being uniquely associated with a pilot signal from the plurality of pilot signals, each pilot signal from the plurality of pilot signals having a first characteristic and a second characteristic;

identifying a first pilot signal from the plurality of pilot signals based on the first characteristic of the first pilot signal; and

adjusting a first weight value associated with each antenna element from the plurality of antenna elements so that the second characteristic of the first pilot signal is substantially optimized with respect to the second characteristic of the remaining pilot signals from the plurality of pilot signals.

2. (Original) The method of claim 1, further comprising:

modifying the data signal associated with the first pilot based on the first weight value and a second weight value associated with each antenna element from the plurality of antenna elements to produce- a modified data signal;

modifying a transmission data signal based on the first weight value and the second weight value associated with each antenna element from the plurality of antenna elements; and

transmitting the modified transmission data signal.

3. (Original) The method of claim 1, further comprising:

performing the following for each antenna element from the plurality of antenna elements:

storing a plurality of signal samples for the first pilot signal; and

filtering the plurality of signal samples for the first pilot signal to produce a plurality of in-phase signal samples and a plurality of quadature signal samples, the first weight value being associated with the plurality of in-phase signal samples, a second weight value being associated with the plurality o£ . quadature signal samples; and

iteratively adjusting the first weight value and the second weight value associated with each antenna element from the plurality of antenna elements so that the second characteristic of the first pilot signal is substantially optimized with respect to the second characteristic of the remaining pilot signals from the plurality of pilot signals.

4. (Original) The method of claim 3, further comprising:

scanning, for each antenna element from the plurality of antenna elements, the stored plurality of signal samples for the first pilot signal to produce an indication of a beginning and an end of the data signal associated with the first pilot signal; and

initially applying the first weight value to the data signal associated with the first pilot signal at the beginning indication.

5. (Original) The method of claim 1, wherein:

the plurality of data signals is associated with a data frequency band within an allocated frequency band;

the plurality of pilot signals each is uniquely associated with a pilot signal band within the allocated frequency band and outside the data frequency band;

the first characteristic of each pilot signal from the plurality of pilot signals is at least one from the group of (a) a frequency of an unmodulated carrier wave and (b) a modulation and a frequency of a modulated carrier wave; and

the second characteristic of each pilot signal from the plurality of pilot signals is a power associated with that pilot signal.

6. (Original) The method of claim 1, wherein:

the plurality of data signals is associated with a data frequency band;

the plurality of pilot signals is associated with the data frequency band;

the first characteristic of each pilot signal from the plurality of pilot signals is a spread spectrum pseudo noise sequence; and

the second characteristic of each pilot signal from the plurality of pilot signals is a power in spread spectrum associated with that pilot signal.

7. (Original) The method of claim 1, wherein:

the plurality of data signals is associated with a data frequency band;

the plurality of pilot signals is associated with the data frequency band, each pilot signal being associated with its own time delay from the associated data signal from the plurality of data signals;

the first characteristic of each pilot signal from the plurality of pilot signals is the associated time delay; and

the second characteristic of each pilot signal from the plurality of pilot signals is a power associated with that pilot signal.

8. (Currently Amended) The method of claim 1, wherein:

each data signal from the plurality of data signals is uniquely associated with a frequency from a plurality of frequencies;

each pilot signal from the plurality of pilot signals is uniquely associated with a modulation code~~, each pilot signal from the plurality of pilot signals is uniquely associated with the~~ **and** a remaining frequency from the plurality of frequencies;

the first characteristic of each pilot signal from the plurality of pilot signals is the modulated code; and

the second characteristic of each pilot signal from the plurality of pilot signals is a power associated with that pilot signal.

9. (Original) The method of claim 1, wherein:

each data signal from the plurality of data signals is amplitude modulated with a unique pilot signal having an associated amplitude-modulation code and a power;

the first characteristic of each pilot signal from the plurality of pilot signals is the amplitude-modulation code associated with that pilot signal; and

the second characteristic of each pilot signal from the plurality of pilot signals is a power associated with that pilot signal.

10. (Original) The method of claim 1, wherein:

each data signal from the plurality of data signals is frequency-shift modulated with a unique pilot signal having an associated frequency-shift code and a power;

the first characteristic of each pilot signal from the plurality of pilot signals is the frequency-shift code associated with that pilot signal; and

the second characteristic of each pilot signal from the plurality of pilot signals is a power associated with that pilot signal.

11. (Original) The method of claim 1, wherein:

each data signal from the plurality of data signals is phase-shift modulated with a unique pilot signal having an associated phase-shift code and a power;

the first characteristic of each pilot signal from the plurality of pilot signals is the phase-shift code associated with that pilot signal; and

the second characteristic of each pilot signal from the plurality of pilot signals is a power associated with that pilot signal.

12. (Currently Amended) An apparatus ~~having~~ **comprising:**

a plurality of antenna elements configured to receive a plurality of data signals and a plurality of pilot signals, each data signal from the plurality of data signals being uniquely associated with a pilot signal from the plurality of pilot signals, each pilot signal from the plurality of pilot signals having a first characteristic and a second characteristic~~, comprising:~~**:**

a plurality of circuits each coupled to an antenna element from the plurality antenna elements, each circuit having:

a filter~~, the filter~~ configured to receive the plurality of data signals and the plurality of pilot signals~~, the filter configured~~ **and** to produce a first signal component and a second **signal** component;

a first weight-application module coupled to the filter, the first weight-application module configured to receive the first signal component and to apply a first weight value to the first signal component; and

a second weight-application module coupled to the filter, the second weight-application module configured to receive the second signal component and to apply a second weight value to the second signal component;

a processor coupled to the plurality of circuits, the processor configured to determine a first pilot signal from the plurality of pilot signals based on the first characteristic of the first pilot signal; and

a best solution selector coupled to the first weight-application module and the second weight-application module of each circuit from the plurality of circuits, the best solution selector configured to select an iteration value for the first weight value and the second weight value based on the second characteristic of the pilot signal.

13. (Original) The apparatus of claim 12, wherein:

the first weight-application module further configured to calculate the first weight value based on the first signal component so that the second characteristic of the first pilot signal is substantially optimized with respect to the second characteristic of the remaining pilot signals from the plurality of pilot signals;

the second weight-application module further configured to calculate the second weight value based on the second signal component so that the second characteristic of the first pilot signal is substantially optimized with respect to the second characteristic of the remaining pilot signals from the plurality of pilot signals.

14. (Original) The apparatus of claim 12, where each circuit from the plurality of circuits further includes:

a second filter coupled to the best solution selector, the filter configured to receive a final value for the first weight value and a final value the second weight value from the best solution selector, the second filter configured to identify a start indicator and an end indicator of the data signal from the plurality of data signals associated with the first pilot signal; and

a complex-weight module coupled to the second filter, the complex-weight module configured to receive the start indicator, the end indicator, the final value of the first weight value and the final value of the second weight value.

15. (Original) The apparatus of claim 12, wherein:

the plurality of data signals is associated with -a data -frequency band within an allocated frequency band;

the plurality of pilot signals each is uniquely associated with a pilot signal band within the allocated frequency band and outside the data frequency band;

the first characteristic of each pilot signal from the plurality of pilot signals is at least one from the group of (a) a frequency of an unmodulated carrier wave and (b) a modulation and a frequency of a modulated carrier wave; and

the second characteristic of each pilot signal from the plurality of pilot signals is a power associated with that pilot signal.

16. (Original) The apparatus of claim 12, wherein:

the plurality of data signals is associated with a data frequency band;

the plurality of pilot signals is associated with the data frequency band;

the first characteristic of each pilot signal from the plurality of pilot signals is a spread spectrum pseudo noise sequence; and

the second characteristic of each pilot signal from the plurality of pilot signals is a power in spread spectrum associated with that pilot signal.

17. (Original) The apparatus of claim 12, wherein:

the plurality of data signals is associated with a data frequency band;

the plurality of pilot signals is associated with the data frequency band, each pilot signal being associated with its own time delay from the associated data signal from the plurality of data signals;

the first characteristic of each pilot signal from the plurality of pilot signals is the associated time delay; and

the second characteristic of each pilot signal from the plurality of pilot signals is a power associated with that pilot signal.

18. (Original) The apparatus of claim 12, wherein:

each data signal from the plurality of data signals is uniquely associated with a frequency from a plurality of frequencies;

each pilot signal from the plurality of pilot signals is uniquely associated with a modulation code, each pilot signal from the plurality of pilot signals is uniquely associated with the a remaining frequency from the plurality of frequencies;

the first characteristic of each pilot signal from the plurality of pilot signals is the modulated code; and

the second characteristic of each pilot signal from the plurality of pilot signals is a power associated with that pilot signal.

19. (Original) The apparatus of claim 12, wherein:

each data signal from the plurality of data signals is amplitude modulated with a unique pilot signal having an associated amplitude-modulation code and a power;

the first characteristic of each pilot signal from the plurality of pilot signals is the amplitude-modulation code associated with that pilot signal; and

the second characteristic of each pilot signal from the plurality of pilot signals is a power associated with that pilot signal.

20. (Original) The apparatus of claim 12, wherein:

each data signal from the plurality of data signals is frequency-shift modulated with a unique pilot signal having an associated frequency-shift code and a power;

the first characteristic of each pilot signal from the plurality of pilot signals is the frequency-shift code associated with that pilot signal; and

the second characteristic of each pilot signal from the plurality of pilot signals is a power associated with that pilot signal.

21. (Original) The apparatus of claim 12, wherein:

each data signal from the plurality of data signals is phase-shift modulated with a unique pilot signal having an associated phase-shift code and a power;

the first characteristic of each pilot signal from the plurality of pilot signals is the phase-shift code associated with that pilot signal; and

the second characteristic of each pilot signal from the plurality of pilot signals is a power associated with that pilot signal.

22. (Currently Amended) A method for using a pilot signal in a communication receiver having a plurality of antenna elements, comprising:

receiving a plurality of data signals and a plurality of pilot signals;

identifying a first pilot signal from the plurality of pilot signals based on a first characteristic of the first pilot signal from the plurality of pilot signals; and

adjusting a plurality of weight values associated with the plurality of antenna elements so that a second characteristic of the first pilot signal is substantially optimized with respect to the second characteristic of the remaining pilot signals from the plurality of pilot signals,

whereby a first data signal from the plurality of data signals and being uniquely associated with the first pilot signal is substantially optimized by the adjusting of the plurality of **weight** values associated with the plurality of antenna elements.